

REMARKS

The Examiner is thanked for the thorough examination of the present application. However, the FINAL Office Action continued to reject all claims. Specifically, claims 1-2, 4, 8-10, 12 and 16 are rejected under 35 U.S.C 102(e) as allegedly anticipated by Maloney (PN. 6,323,985), and claims 3, 5-7, 11 and 13-15 are rejected under 35 U.S.C 103(a) as allegedly unpatentable over Maloney (PN. 6,323,985) in view of Merrill et al. (PN. 6,150,683).

Applicant has amended independent claims 1 and 9 to more clearly define the invention over the cited art of record. No new matter has been introduced by this amendment.

Specially, claims 1 and 9 have been amended to recite an imager sensor structure comprising at least one photodiode region and at least one transistor, wherein the photodiode region comprises a p-type region extending to a surface of the semiconductor substrate and an n well region formed in said p-type region, wherein the n well region comprises a bar portion and a plurality of parallel finger portions extending from the bar portion, and the bar portion is electrically connected to the transistor via a connection. Referring to Figs. 4 and 5 of the specification, an embodiment of the present invention is described to have an increased junction area of the photodiode region, thereby improving the sensitivity of the image sensor. Support for the limitation in claims 1 and 9 can be found in Figs. 4 and 5 and in the embodiment.

Discussion of Rejections Under 35 U.S.C 102

Turning now to the substantive rejections, reconsideration of the rejected claims is respectfully requested in view of the following remarks. The Applicant respectfully traverses the rejections for at least the following reasons.

In the Office Action, claims 1 and 9 were rejected under 35 U.S.C 102(e) as allegedly anticipated by Maloney (PN. 6,323,985). To the extent the grounds of the rejection may be applied to claims now pending in this application, they are respectively traversed.

As shown in Figs. 2, 4-5 and 7 of the prior art (PN. 6,323,985), Maloney discloses a through silicon optical modulator (TSOM) 200 **without a photodiode region**. The TSOM 200 comprises a MOS structure formed in an N-well 220, wherein the MOS structure comprises a gate electrode 204 and source and drain regions 214. Referring to Fig. 5, the parallel source and drain regions 214 are **not electrically connected to each other, unlike the finger portions of the n well region of the presently-claimed invention, which are electrically connected to each other via a bar portion of the n well region**. Referring to Fig. 7a of the present application, the gate electrodes 502 and 504 are electrically coupled to the potential of isolation well 506 via n+ region 510. **Since the TSOM of the cited reference does not teach a photodiode region and an n well region with bar and finger portions formed in the photodiode region, the structure of the cited reference is different from that defined by the pending claims.** For at least this reason, the rejection of independent claims 1 and 9 should be withdrawn.

Further, and as an independent basis for the patentability of independent claims 1 and 9, Maloney dose not disclose an imager sensor structure comprising at least one photodiode region and at least one transistor, wherein the photodiode region comprises a p-type region extending to a surface of the semiconductor substrate and an n well region formed in said p-type region, the n well region comprises a bar portion and a plurality of parallel finger portions extending from the bar portion, and the bar portion is electrically connected to the transistor via a connection. Thus, the present structure is different from the cited reference. **Further, the cited art provides no motivation and no reasonable expectation of success for achieving the presently claimed**

structure comprising a photodiode region having an n well region with a bar portion and a plurality of parallel finger portions extending from the bar portion.

Further still, the prior art does not describe or suggest all the elements of the present invention as specifically defined in independent claims 1 and 9, and thus cannot anticipate these claims under 35 U.S.C. 102.

For similar reasons, the cited art does not render claims 1 and 9 obvious under 35 U.S.C. 103, as there is no proper suggestion of an imager sensor structure comprising at least one photodiode region and at least one transistor, wherein the photodiode region comprises a p-type region extending to a surface of the semiconductor substrate and an n well region formed in said p-type region, the n well region comprises a bar portion and a plurality of parallel finger portions extending from the bar portion, and the bar portion is electrically connected to the transistor via a connection.

It is well-settled law that in order to properly support an obviousness rejection under 35 U.S.C. § 103, there must have been some teaching in the prior art to suggest to one skilled in the art that the claimed invention would have been obvious. W. L. Gore & Associates, Inc. v. Garlock Thomas, Inc., 721 F.2d 1540, 1551 (Fed. Cir. 1983). More significantly,

"The consistent criteria for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that this [invention] should be carried out and would have a reasonable likelihood of success, viewed in light of the prior art. ..." Both the suggestion and the expectation of success must be founded in the prior art, not in the applicant's disclosure... In determining whether such a suggestion can fairly be gleaned from the prior art, the full field of the invention must be considered; for the person of ordinary skill in the art is charged with knowledge of the entire body of technological literature, including that which might lead away from the claimed invention."

(Emphasis added) In re Dow Chemical Company, 837 F.2d 469, 473 (Fed. Cir. 1988).

In this regard, Applicant notes that there must not only be a suggestion to combine the functional or operational aspects of the combined references, but that the Federal Circuit also

requires the prior art to suggest both the combination of elements and the structure resulting from the combination. Stiftung v. Renishaw PLC, 945 Fed.2d 1173 (Fed. Cir. 1991). Therefore, in order to sustain an obviousness rejection based upon a combination of any two or more prior art references, the prior art must properly suggest the desirability of combining the particular elements to novel design and fabrication method for fingerN-type doped photodiodes, as defined by claims 1 and 9.

When an obviousness determination is based on multiple prior art references, there must be a showing of some “teaching, suggestion, or reason” to combine the references. Gambro Lundia AB v. Baxter Healthcare Corp., 110 F.3d 1573, 1579, 42 USPQ2d 1378, 1383 (Fed. Cir. 1997) (also noting that the “absence of such a suggestion to combine is dispositive in an obviousness determination”).

Evidence of a suggestion, teaching, or motivation to combine prior art references may flow, inter alia, from the references themselves, the knowledge of one of ordinary skill in the art, or from the nature of the problem to be solved. See In re Dembiczak, 175 F.3d 994, 1000, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). Although a reference need not expressly teach that the disclosure contained therein should be combined with another, the showing of combinability, in whatever form, must nevertheless be “clear and particular.” Dembiczak, 175 F.3d at 999, 50 USPQ2d at 1617.

In forming the rejection, the Office Action merely concluded that the combination of the two references would have been obvious, without providing an substantive or objective basis for this conclusion. Accordingly, Applicant submits that such a rejection is legally deficient and should be withdrawn.

Accordingly, it is respectfully submitted that claims 1 and 9 and all claims dependent thereon are allowable over the prior art. Reconsideration and withdrawal of the pending grounds of the rejection is therefore respectfully requested. For at least the same reasons, the rejections of dependent claims 2-8 and 10-16 should be withdrawn as well.

CONCLUSION

In view of the foregoing, it is believed that all pending claims are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

No fee is believed to be due in connection with this amendment and response to Office Action. If, however, any fee is believed to be due, you are hereby authorized to charge any such fee to deposit account No. 20-0778.

Respectfully submitted,

By:



Daniel R. McClure
Registration No. 38,962

Thomas, Kayden, Horstemeyer & Risley, LLP
100 Galleria Pkwy, NW
Suite 1750
Atlanta, GA 30339
770-933-9500